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Abstract: Entrepreneurs exit their business due to selection pressures experienced in the market place, i.e. business failure. Next to this well known ex-post decision to exit, entrepreneurs select ex-ante whether they are willing to pursue an entrepreneurial career at all, or to give up these entrepreneurial intentions. Hardly anything is known about the latter selection process in imagined markets that precedes the variety creation and selection process in real markets. This paper explores and explains the prevalence of these two selection processes using survey data on 20,000 individuals in 27 European countries and the US in 2007. We distinguish business failures from exit by sell-off. Results indicate that individuals in the US are less likely to exit imagined markets, and are more likely to have exited the real market (especially by selling their business) than Europeans. Individuals in a Corporatist welfare state regime have relatively high chances to exit imagined markets. Business owners in urban environments are more likely to fail, while individuals with a high risk tolerance, a high education and self-employed parents are less likely to exit in imagined as well as in real markets (via business failure). This study shows that exit in real and in imagined markets is differently affected by competition and institutions. These selection environments have differential effects on entrepreneurial aspirations and actions of individuals, and provide evidence for the dissimilar nature of exit in real and exit in imagined markets.

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1. Introduction

Entrepreneurs are important drivers of variation in the economy (Metcalfe 1997; Baumol 2002). Without variation there is no selection and learning and hence no economic progress (Audretsch et al. 2004). Economic progress hinges on the essential mechanisms of the creation of variation and the operation of selection. Creation of variation is often analyzed investigating the entry of new firms, whereas selection is analyzed investigating the exit of incumbent firms (*ex-post* selection). In the evolutionary approach, the creation of new organizations does not only involve new variation but also includes *ex-ante* selection, as the persons involved evaluate whether an opportunity can be turned into a business which is sufficiently profitable in the sense that its foundation offsets the (opportunity) costs involved. However, pre-entry market selection (*ex-ante* selection) has hardly received attention (Barnett et al. 2003). Two environmental characteristics drive the entry decision: the munificence of opportunities and the availability of resources. The combination of these two characteristics and the individual's evaluation of the potential business make the nascent entrepreneur decide to start a firm. Without opportunities, persons will not be triggered to take any action to start a new firm, and without resources, nascent entrepreneurs are likely to be frustrated in the pursuit of the opportunities.

Post-entry market selection is a much better researched phenomenon (Mata and Portugal 1994; Mata et al. 1995) than pre-entry market selection. An important empirical reason for the lack of research on ex-ante selection processes resides in the difficulty of obtaining data about nascent entrepreneurs (Reynolds 1997; Van Gelderen et al. 2005) or pre-producer firms (Jovanovic 2004; Carroll and Khessina 2005): in other words, about the risk set from which entry selection processes must be selected. Such studies require drawing samples of individuals from the entire population (instead of census-based firm data), which is often difficult for researchers to accomplish. This also involves a shift of level of analysis from the firm to the person (Scott and Rosa 1996; Shane and Khurana 2003).

A theoretical reason for the neglect of ex-ante selection is that in mainstream economics, ex-ante and ex-post selection are often treated as close to being observationally equivalent: ex-ante selection by rational actors and ex-post market selection are said to deliver the same outcomes. This assumes that foresight is perfect. According to Alchian (1950), the probability of entry and the probability of survival are likely to be interrelated. However, the presence of uncertainty and incomplete information (i.e. the absence of perfect foresight) makes it likely that these two probabilities differ. In the organizational ecology paradigm two selection processes are distinguished that do not necessarily align: involuntary unemployment or forced retirement can be expected to increase the likelihood of attempting to found a new business but may not increase its odds of success, and conversely, a strong regulatory regime may decrease the rate of attempts but increase the success rate of those that do (Carroll and Khessina 2005). Widely held notions of bounded rationality also suggest that while expectations about the future may guide individual behaviour, common social situations are filled with uncertainty, ambiguity and imperfect information, thereby making the equation of ex-ante with ex-post selection unrealistic. The economics profession in general focuses on revealed preferences (ex-post selection) instead of stated preferences and the decision process that precedes the revealed preference (ex-ante selection). This drives the study of the differences between pre-entry and post-entry market selection outside the scope of the dominant debates.

In a societal context both types of exit are highly relevant. Exit before business start-up could prevent excess entry (Camerer and Lovallo 1999) and prevents overinvestment and the waste of resources as positive consequences. However, a negative consequence might be the absence of experimentation (new variety) and (entrepreneurial) learning. Exit after business start-up might have private losses and the waste of resources (in the form of sunk costs) as a negative consequence, but possible individual and vicarious learning about entrepreneurship and markets (Knott and Posen 2005) as a positive result. The negative consequences are not present when the firm exits via a sell-off: resources are not wasted with this mode of exit and it might even include private gains (Holmes and Schmitz 1990; Stam et al. 2008). Persons that have faced the market with their own business are likely to be better informed about markets than persons that have never entered the market with their

own business. Market forces provide feedback to entrepreneurs in a more immediate, concrete and blunt way than many other settings where expertise is attained. This is why "market experience" may have positive learning effects beyond the life of the entrepreneur's firm (Stam et al. 2008).

In this paper both ex-ante and ex-post selection processes will be analyzed using a large survey among the European and US adult population. We define entrepreneurship as having the intentions or making efforts to become a business owner, or currently owning a business (Hyytinen and Ilmakunnas 2007). Exit before business start-up (ex-ante selection) depends on market expectations of the nascent entrepreneur (imagined markets), while exit after business start-up (ex-post selection) is more likely to be affected by the (revealed, real) market selection process. There has been a long debate in industrial economics and organizational ecology on selection processes (Alchian 1950; Winter 1971; Geroski 2001; Barnett et al. 2003). However, industrial economics and organizational ecology research generally only include revealed preferences. This paper also includes stated preferences and the decision to exit the population of nascent entrepreneurs. More specifically, these two exit processes connect closely to recent debates in entrepreneurship research on the recognition, evaluation and exploitation of entrepreneurial opportunities (Shane and Venkataraman 2000). There has been much research on the recognition and exploitation of opportunities but little is known about their evaluation. This evaluation can be done by the entrepreneur, which may lead to giving up the pursuit of a business opportunity. Better known is the evaluation by the market, i.e. the external selection environment of businesses already in operation, which may lead to the closure of a business. The two selection processes can also be conceived as two types of exits out of the entrepreneurial process: 1) Exit after opportunity recognition: "I thought of starting a business or I had already taken steps to start a business, but gave up"; and 2) Exit after opportunity exploitation. This second type of exit is investigated under two circumstances: "I once started a business but currently I am no longer an entrepreneur since business has failed" and "I Once started a business, but currently I am no longer an entrepreneur since business was sold, transferred or closed". The first option is the best indicator of market selection.

The contributions of this paper are the analyses of the role of ecological and personal characteristics in ex-ante and ex-post market selection, and of the differences in the explanations of entrepreneurial exit in imagined and real markets, respectively. In addition, we refine the exit in real markets by distinguishing between exit due to business failure and exit due to sell-off. We take into account characteristics related to personality and human capital, while the ecological characteristics reflect levels of environmental munificence, levels of competition and welfare state arrangements. Unlike prior studies with an evolutionary approach, we do not take the organization as the unit of selection, but instead the (potential) entrepreneur with specific cognitive and other abilities. There are at least two arguments in favour of taking the individual person instead of the firm as the level of analysis: first, in the case of ex-ante selection a firm does not (yet) exist, and second, most firms – even in advanced capitalist economies – are dominated by the entrepreneur. In Europe, the majority of formally registered firms involve less than two persons (European Commission 2004). In combining both personal and ecological factors we bring together the traits and rates approaches (Aldrich and Wiedenmayer 1993).

The main research question in this paper is "How can entrepreneurial exit in real and imagined markets be explained?" In addition we will discuss the differences between the explanation of exit in real markets and in imagined markets, The paper starts with a discussion of the causes of entrepreneurial exit in real and imagined markets. Next, the data and method are presented. In the succeeding section we present and interpret the outcomes of our empirical study. The paper ends with the conclusion.

2. Entrepreneurial exit

Once the entrepreneur has entered the market with his new firm, he has to face the real – and not just the imagined – market selection. Most research, particularly in economics, studied the (relative) importance of firm- and industry-specific variables explaining firm exit. Some stylized facts in this tradition are that firm exit is negatively related to firm (start-up) size, firm age, the number of plants

operated by the firm, the industry growth rate, and positively with the extent of entry in the industry (Mata and Portugal 1994; Ilmakunnas and Topi 1999).

However, for understanding new firm formation (including pre-entry market selection) and survival, one must understand the way individuals aspire and take actions to start a firm (Shane and Khurana 2003). In their analysis of firm survival, Cefis and Marsili (2005) also make a plea for taking into account the characteristics of entrepreneurs when explaining the survival of new firms. The few economic studies of firm exit that consider personal characteristics find ambiguous effects of age and a negative effect of several kinds of human capital such as general education and industry experience (Bates 1990; Van Praag 2003). There has been some other than economic research on the relationship between the entrepreneur's personality and firm exit (Ciavarella et al. 2004), but knowledge of the relation between personal characteristics and firm exit remains scarce. In the present paper we focus on entrepreneurial exit, i.e. the decision to quit an entrepreneurial career. This is not necessarily the same as firm exit, because entrepreneurs may own several firms at the same time ("portfolio entrepreneurship") or successively ("serial entrepreneurship"), or individuals may quit their entrepreneurial career by selling their business.

Many people never think about being an entrepreneur. This group of individuals can hardly be thought of as being at risk of becoming an entrepreneur, nor as being confronted with the market forces in a process of economic selection (Alchian 1950). However, this particular group cannot be neglected in the analysis of entrepreneurial exit which will be shown in a later stadium. Undoubtedly, people that are thinking about starting a business (Blanchflower et al. 2001; Grilo and Irigoyen 2006; Grilo and Thurik 2008), or that are even taking steps to start a business (Reynolds 1997; Davidsson 2006), are at risk of becoming an entrepreneur (nascent entrepreneurs). They have to take into account the market forces they are confronted with after the business has been started. This implies that they have to develop expectations about the market forces that will eventually determine the viability of their future business. The closer they come to the entry of the market, the more likely they will have developed an image of the selection environment. This suggests that individuals that have started a business have better insights in the selection environment than individuals that are only thinking or trying to set up a business. Studies on nascent entrepreneurship have focused mainly on individual-level explanations. We will explicitly take into account different elements of the environment, for example the perceived resource availability of the environment, the degree of urbanization (a proxy for resource availability and competition), and the national institutional system. This latter element relates to a recent study by Henrekson (2005), which shows how key welfare state institutions tend to reduce economic incentives for entrepreneurship.

In order to explain exit in real and imagined markets, we compare persons that currently own a business with persons that no longer own a business, and persons that aspire and take steps to start a business with persons that have given up these entrepreneurial aspirations and efforts. In the next two sections we will discuss the potential personal- and ecological-level drivers of exit in imagined and real markets.

2.1 Personal characteristics

Determining the effects of individual characteristics on imagined and real market exit requires taking into account the effect of the specific variable on the probability of experiencing imagined and real market conditions, respectively. Therefore, we simultaneously include these two principles in one model formulation. Risk tolerant persons are more likely to experiment. They are thus more likely to consider and exploit nascent activities. They have a higher chance of once having closed a business because they pursue less certain and, on average, lower quality opportunities than risk-averse individuals. At the same time notice that because of the lower threshold of recognizing an opportunity for risk-tolerant individuals, the exploitation of the recognized opportunity could be not as easy as expected, which may lead to a higher likelihood of exit in imagined markets.[1]

On the one hand highly educated people are more likely to develop the necessary skills for realizing their entrepreneurial ideas and running a business successfully. However, on the other hand, they are also more likely to face high opportunity costs in comparison to wage labour and thus exit. Both ex-

ante and ex-post selection are likely to be affected by opportunity costs (Amit et al. 1995), i.e. alternative job market opportunities. Especially exit after business start-up is likely to be affected by the aspiration level of the entrepreneur (Gimeno et al. 1997; Baldwin and Rafiquzzaman 1995). The outcome of the trade-off between improved skill levels and higher opportunity costs due to high levels of education is an empirical issue. With regard to nascent entrepreneurs, Parker and Belghitar (2006) found a negative effect of education on exit, while Van Gelderen et al. (2005) found no effect of education on exit. There has been more research on the effect of education on exit in real markets: two studies have found a negative effect of education on entrepreneurial exit (Bruce 2002; Burke et al. 2008), but other studies did not find an effect (Taylor 1999; Van Praag 2003), or even found a positive effect (Blanchflower and Meyer 1994). Given the unclear trade-off between improved skill levels and higher opportunity costs, we do not anticipate a clear-cut effect of education upon entrepreneurial exit (Van der Sluis et al. 2005), neither in imagined nor in real markets.

Persons with self-employed parents will be more committed to entrepreneurship, due to both social norms and the entrepreneurial skills that they have acquired (Aldrich and Kim 2007). This means that they will be less likely to exit than persons without self-employed parents. Lentz and Laband (1990) found that for self-employed individuals, acquisition of entrepreneurial human capital occurs primarily through experience, and that sons and daughters of self-employed benefit greatly from exposure at an early age to their parents' business establishments and subsequently decide to go into business themselves. Cooper (1993) found that having parents who owned a business appeared to increase the probability of firm survival, and Burke et al. (2008) found that a self-employed father increased persistence in an entrepreneurial career.

Young persons are more likely to be adventurous and experimenting than older people, which makes them more likely to think or take steps to become an entrepreneur (Lévesque and Minniti 2006; Davidsson 2006). This 'age' effect may largely be covered by levels of risk tolerance,[2] or overconfidence (Forbes 2005). Parker and Belghitar (2006) and Van Gelderen et al. (2005) found no significant effect of age on exit in imagined markets. Once they have started, young people are more likely to exit because they have less experience and more alternative labour market opportunities. Several studies, however, found a negative effect of age on exit in real markets (Evans and Leighton 1989; Blanchflower and Meyer 1994; Holtz-Eakin et al. 1994; Taylor 1999; Van Praag 2003). This latter outcome can be explained by the combined effect of two mechanisms: age increases the human capital of the individual and thus should have a positive effect on the survival of the business, and age lowers the possibility of returning to employment (due to fewer labour market alternatives: Cooper 1993) making the shift to a wage-earner career less likely. Evans and Leighton (1989) found very high exit rates for young persons, which reaches a plateau after the age of 30. When we take the retirement age of individuals into account, we expect a slightly U-shaped curve, with increasing chances of exit by sell-off (for example with a business transfer) at the right-hand side of the curve.

2.2 Ecological characteristics

The ecologies in which entrepreneurs are active differ in their level of resource munificence and competition, which are expected to have negative and positive effects on exit, respectively. Munificent environments are likely to lower the barriers to entry and the chances of exit. We expect that indicators of perceived constraints in the environment are related to giving up entrepreneurial intentions and efforts, and to closing a business as well.

These perceived environmental constraints may be caused by a lack of resources in the environment or by a lack of *access* to resources. This latter cause relates to the legitimacy of the entrepreneur's activities (Hannan and Freeman 1984; Delmar and Shane 2004): in certain environments the activities of new firms are regarded as relatively less reliable and accountable than in other environments. This constrains their access to the necessary resources to realize a new firm and to survive in competition with established firms. This legitimacy effect is most likely reflected in the perceived lack of financial support and perceived difficulty of obtaining sufficient information.

Market opportunities, resources and competition are in general more concentrated in metropolitan and urban areas than in rural areas. The availability of resources and/or social networks that provide

access to these resources (Sørenson and Sorenson 2003; Stuart and Sorenson 2003) makes it less likely that entrepreneurial intentions and efforts are constrained in metropolitan and urban areas. The large concentration of entrepreneurs in these areas also lowers the ambiguity attached to entrepreneurship and promotes its choice as a viable source of revenues (Minniti 2005). An interesting related research question is whether the high levels of competition have a stronger effect on ex-ante selection than on ex-post selection. Because of this competition element, especially metropolitan but also urban areas are likely to have a positive effect on exit in real markets. Competition is more likely to be experienced in real markets than in imagined markets, so we do not expect an effect (or perhaps only a smaller effect) of the competition element on giving up entrepreneurial intentions or efforts.[3]

Many studies on entrepreneurship and firm exit use evidence from a single country to identify the role of economic institutions or policy. A cross-country set of micro-level data provides better identification of the effect of different institutional settings (Bartelsman et al. 2005; Reynolds et al. 2005). Welfare state institutions tend to reduce economic incentives for entrepreneurship (Henrekson 2005). So, even if persons are thinking about or taking steps to start a business in countries with a strong welfare state, they are more likely to give up these entrepreneurial intentions and efforts, because these are less likely to pay off in comparison to wage labour in such systems. Strong welfare states also discourage risky businesses and such environments may have a positive effect on the survival of existing businesses.[4]

3. Data, measurement and method

Data are used from the 2007 "Flash Eurobarometer Survey on Entrepreneurship, No. 192" of the European Commission, originally consisting of about 20,000 observations for 25 member states of the European Union[5] as well as Iceland, Norway and the United States. Randomized telephone interviews were conducted by Gallup Organization Hungary/Europe between January 9 and January 16, 2007 with respondents aged 15 years and over. In most European countries and in the US the target sample size amounted to 1,000 respondents. However, in Austria, Cyprus, Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Slovakia, Slovenia, and Sweden, the target size was 500.[6]

The following question forms the basis for the explanation of both types of exit: *"Have you ever started a business or are you taking steps to start one?"* The options for answering are:

"It never came to your mind to start a business." ("never considered")

"No, but you are thinking about it." ("thinking")

"Yes, you are currently taking steps to start a new business." ("taking steps")

"No, you thought of it or you had already taken steps to start a business but gave up." ("gave up")

"Yes, you have started or taken over a business in the last 3 years which is still active today." ("young business")

"Yes, you started or took over a business more than 3 years ago and it is still active." ("mature business")

"Yes, you once started a business, but currently you are no longer an entrepreneur since business has failed." ("failure")

"No, you once started a business, but currently you are no longer an entrepreneur since business was sold, transferred or closed." ("sell-off")

Each option represents a different level of involvement in the entrepreneurial process, ranging from no familiarity with self-employment at all to exit in real markets. Grilo and Thurik (2008) refer to these categories as "engagement levels".[7] The two engagement levels describing real exit distinguish between successful entrepreneurs who retired, transferred their business (perhaps they have recognized a better opportunity) or profitably sold their business, and entrepreneurs who met with

less success and failed. The first type of real firm exit cannot be regarded as a straightforward outcome of market selection.

The country averages for each engagement level are given in table 1. Clear differences between the European countries and the US can be observed. In the US 30% never considered setting up a business while in the European countries this percentage amounts to 52. The "thinking" and "taking steps" percentages in Europe are considerably lower than in the US (unweighted averages of 11% and 4% versus 21% and 9%). Concerning imagined exit, 14% has given up his/her aspirations or efforts to start a business in Europe, sharply contrasting the 9% for the US. Furthermore, large variation occurs in the "sell-off" category: the US, the Scandinavian countries and Cyprus stand out with high percentages. Further inspection shows that the differences between the eight post-communist member states and the other 19 European countries are relatively small (percentages are omitted from table 1). For example, in the post-communist countries 51% reports "never considered" while 52% gives this answer in the non-communist countries. The "thinking" and "taking steps" categories represent 16% and 5% of the respondents in the post-communist and 10% and 3% in the non-communist countries.

TABLE 1 ABOUT HERE

We realize that the "method of moment inequalities" to investigate market entry and exit dynamics would be a sensible candidate for our purposes (Pakes et al. 2005). The assumption of this method is that agents behave according to maximization of their expected returns. An approximation of realized profits from the actual choice strategy undertaken by the individual and of at least one other feasible alternative is required. However, we do not have information about the expected profits of the realized strategy and the choice that has not been undertaken, nor about any other approximation. Therefore, we will not use the method proposed in Pakes et al. (2005). Instead, we make use of binary probit models (with correction for potential sample selection bias) to investigate exit in imagined and real markets, as will be explained below.

To examine how and in what way exit in imagined markets differs from exit in real markets, we make use of all engagement levels that are displayed above. *First*, we compare persons that currently have entrepreneurial intentions or are taking steps to start a business with persons that gave up these intentions or efforts. We use a binary probit model with "gave up" (versus "thinking" and "taking steps") as dependent variable to analyse exit in imagined markets. *Second*, we put persons that currently own a business against persons that have closed their business, either successfully or unsuccessfully. Hence, the analysis of exit in real markets amounts to two binary probit models with "failure" and "sell-off" (versus "young business" and "mature business") as distinctive dependent variables. See table 2.

TABLE 2 ABOUT HERE

In each binary probit regression a sample selection problem is expected to come to the fore. *First* concentrating on the exit in imagined markets regression, it may well be that respondents that have never considered setting up a business have a likelihood (albeit probably small given the small values of their explanatory variables) of being active in the imagined market.[8] In other words, estimating the exit in imagined markets model parameters with only data on individuals in the "thinking", "taking steps" and "gave up" engagement levels does not result in estimates that can be generalized to the entire population. Hence, individuals belonging to "never considered" cannot be neglected with respect to explaining the probability of exiting the imagined market place. Although for these individuals the value of the dependent variable is not observed, the exit in imagined markets regression may well apply to them as well and ignoring these individuals may yield inconsistent estimates.

A sample selection model consisting of two equations has to be estimated to overcome this issue. The first binary probit equation is the "exit equation" and analyses exit in imagined markets based on the observations for which this dependent variable is observed, i.e. individuals in the "thinking", "taking steps" and "gave up" engagement levels. The second binary probit equation is the "selection equation" and identifies the "selection rule": this equation indicates for which individuals the dependent variable is observed and for which individuals it is not observed ("never considered"). This equation thus discriminates between all individuals that have once been active in the imagined exit market place and those having never considered being an entrepreneur. Technically, it is the possible correlation between the disturbances of both (underlying latent) equations that justifies the use of a sample selection model.[9] Sample selection bias does not occur when the probability of selection depends on exogenous variables only, and not on the relevant dependent variable. Then, the selection rule can be ignored.

Not considering other engagement levels in the selection equation may lead to a sample selection bias as well: the fact of whether or not being a business owner clearly depends on the value of the dependent variable of the imagined exit equation. Having given up entrepreneurial intentions or efforts is expected to lower the probability of being a business owner, and vice versa. This latter possible type of sample selection bias can also be explained by imagining that the latent continuous variable underlying the imagined exit equation is truncated from below and that truncated observations are not included in this regression, but rather correspond to "young business" and "mature business".

Concerning our analysis of imagined exit, we start by including "never considered" as reference group in the selection equation. Then, we proceed by running a regression with the combination of "young business" and "mature business" as reference group.

Second, we anticipate upon the expected sample selection issues in the exit in real markets regression. In fact, the engagement levels "never considered", "thinking" and "taking steps" are likely to predict future business ownership in an increasing order. Also, individuals that have given up their aspirations or efforts may have experience with the real market conditions. In short, if the respondent does not answer "failure" or "sell-off", this does not necessarily mean that he or she had not closed a business before: currently thinking about entrepreneurship or taking steps may mask prior (or present) business ownership. Because individuals in "never considered", "thinking" and "taking steps" probably have the highest likelihood of being selected into the pool of individuals that are at risk of exiting the real market place, we merge these three engagement levels and include the resulting combination as a reference group in our selection equation.

Finally note that being currently a business owner does not exclude having closed a business before (as with serial or portfolio entrepreneurs; see Westhead and Wright 1998).

The explanatory variables used in the present study can be divided into two types: personal characteristics and environmental (ecological) characteristics.

Personal characteristics: gender, self-employed parents, age and level of education. "Age when finished full education" is used as a continuous approximation of the level of education.[10] Age is measured as the current age – in years – of the respondent (not necessarily at time of exit, which then most likely happened at a younger age).[11] Gender (male=1; female=0) and self-employed parents (at least one of the parents is/was self-employed=1; otherwise 0) are the obvious dummy variables. The first variable is only taken into account as a control variable. The averages of age and education are 47.05 and 19.71 years (with standard deviations of 16.92 and 7.03 years), respectively. These numbers are based on 15,415 observations; this number is chosen such that no single observation contains missing values on any of the variables that is included in the analyses that follow. It turns out that 27% of the individuals in this sample have at least one (former) self-employed parent.

Next to these "usual suspects" in demographic research, we have also included an often used entrepreneurial personality variable, namely risk tolerance. Risk tolerance is captured by the following question: *"One should not start a business if there is a risk it might fail"*. For this statement

the risk tolerance dummy takes value 1 if "disagree" or "strongly disagree", and 0 if "agree" or "strongly agree" is given as response.[12] The average value of this variable is 0.50.

Ecological characteristics: We have explicitly taken into account different elements of the environment: the perceived environmental constraints, the degree of urbanization (a proxy for resource munificence and competition), and the national institutional system. The perceived environmental constraints are measured using three variables: the perception of lack of available financial support, the perception of complexity of administrative procedures, and the perception of lack of sufficient information on setting up an own business. These variables are captured, respectively, by the question: *"Do you strongly agree, agree, disagree or strongly disagree with the following statements?"* given the following statements:

"It is difficult to start one's own business due to a lack of available financial support."

"It is difficult to start one's own business due to the complex administrative procedures."

"It is difficult to obtain sufficient information on how to start a business."

For each statement a dummy variable is constructed. The dummy variables take the value 1 in the case of "agree" or "strongly agree" for the four statements, and 0 if "disagree" or "strongly disagree" is answered. The averages are 0.79, 0.74 and 0.51, respectively, across the sample.

The degree of urbanization (a proxy for resource munificence and competition), is measured by asking the respondent in which kind of locality his business is located. Three mutually exclusive answer categories are possible: metropolitan zone, urban centre, and rural zone. Rural zone is taken as the base category. The percentages of metropolitan, urban and rural areas in the sample are 0.22, 0.43 and 0.35, respectively. Finally, the country-specific institutional systems are taken into account using the categorization of institutional systems, by Esping-Andersen (1999) (see table 3). In this categorization, Liberal/Anglo-Saxon countries[13] are taken as the base. Therefore, the coefficients associated with these variables are to be interpreted as the impact of being in the corresponding institutional systems rather than being in Liberal/Anglo-Saxon. The relative contribution of each institutional system to the sample is also given in table 3 (i.e., the averages of the constructed variables).

TABLE 3 ABOUT HERE

4. Results

How can exit in imagined and real markets be explained? Table 4 presents the coefficients of the explanatory variables affecting exit in imagined markets ("gave up")[14] and exit in real markets ("failure" and "sell-off"). For each regression, it is indicated of which observations the selection equation consists. The coefficients of the selection equations are displayed in Table 5. In the present section, we will first present and discuss the effects of personal characteristics, followed by a presentation and discussion of the effects of ecological characteristics.

First we observe that there is an indication of sample selection bias in the explanation of exit in imagined markets, given that the reference group in the selection equation is "young business" and "mature business".[15] Thus, there appears to be unobserved heterogeneity that both affects the selection process and exit in imagined markets. The estimated correlation coefficient between the exit equation and selection equation has the expected sign. In all other regressions, we fail to reject the null hypothesis of zero correlation.

TABLE 4 ABOUT HERE

TABLE 5 ABOUT HERE

4.1 Personal characteristics

Unambiguously, and partly in contrast to our expectations, risk tolerance appears to have a negative influence on exit in imagined markets[16] and on exit in real markets due to failure. Earlier research has already shown that risk tolerance matters for having entrepreneurial preferences (Grilo and Irigoyen 2006; Grilo and Thurik 2005) and entry into self-employment (Van Praag and Cramer 2001; Cramer et al. 2002). Our selection equations reveal that risk tolerance indeed has a strong positive impact on belonging to the pool of individuals experiencing imagined and real market conditions. Given that one belongs to either of these markets, risk tolerant people (who are more likely to be present in these markets) are also less likely to exit. The present research thus shows that risk tolerance not only discriminates within the group of individuals that are at risk to become an entrepreneur, but also within the group of current and former business owners.

A clear significant negative effect for education is found for exit in imagined as well as real markets. The importance of education might indicate that higher educated persons are better able to recognize high value entrepreneurial opportunities (which lower the probability of exit in imagined markets) and are more able to manage a business successfully. This strong effect of ability seems to offset the high opportunity costs of entrepreneurship for highly educated people.

Persons with self-employed parents are less likely to give up their entrepreneurial intentions and efforts and once they have started as a business owner they are less likely to fail. This might be explained by the indirect learning effect, i.e. observing entrepreneurial actions of role models (Aldrich and Kim 2007).[17] Our selection equations show that respondents with self-employed parents also have a higher likelihood to have ever taken steps to start a business or have ever run a business.

Age seems to have a positive linear effect on exit in imagined markets (irrelevant turning point of 75 years in case of the second imagined model specification) and a positive quadratic effect on exit in real markets.

4.2 Ecological characteristics

While perceived environmental constraints are hardly related to exit, urban and metropolitan locations have the expected negative effect on exit in imagined markets,[18] and being located in an urban area increases the probability of business failure. The effect of real competition in urban environments seems to be more relevant than the imagined effect. The higher likelihood of not being a business owner anymore in urban areas might also be explained by overconfidence: the high number of new firms in urban areas may draw poorly prepared or overly optimistic founders into the entrepreneurial population.

Finally, the welfare state regimes have the expected positive effect on exit in imagined markets: individuals in Corporatist regimes have fewer incentives to maintain their entrepreneurial intentions and efforts, relative to individuals in Anglo-Saxon regimes. Concerning exit in real markets, individuals in Corporatist regimes are at par with Anglo-Saxon countries concerning their entrepreneurial exit probabilities. The institutionally less advanced Southern Europe regime has a negative effect on the probability of the two modes of exit in the real market.

Table 6 summarizes the empirical evidence of our analyses.

TABLE 6 ABOUT HERE

5. Conclusion and discussion

We present evidence on the determinants of entrepreneurial exit in real and imagined markets using a cross-section survey of some 20,000 individuals in European countries and the US. Prospective

business owners enter an imagined market when they start thinking about setting up a business or are taking preparatory steps. The novelty of our approach is in the comparison of ex-post selection (business failure in real markets) with ex-ante selection (in imagined markets). We have assessed the role of personal and ecological characteristics in the explanation of exit in real and imagined markets.

It turns out that risk tolerance and human capital variables like educational level and having self-employed parents have significant negative relations with exit in imagined markets and exit in real markets due to business failure. Ecological characteristics related to urbanization and welfare state regimes seem to have different effects on exit in imagined markets as compared to exit in real markets.

We could interpret our results from a "rational expectations" viewpoint: prospective entrants objectively assess the returns of entering the market as an entrepreneur. They make decisions on whether or not to enter, and the timing and mode of entry, in a manner that seeks to maximize expected profit in an uncertain environment (Helfat and Lieberman 2002). While rational behaviour of this sort may be a reasonable first approximation, numerous studies suggest that entrants often suffer from cognitive biases (Kahneman and Lovallo 1993; Dosi and Lovallo 1997). Entrants may be overly optimistic about their own abilities which would mean that such biases would contribute to "excessive" entry as well as deviations from viable resource matching. This seems especially relevant when certain explanatory variables do not have an effect (or have a negative effect) on exit in imagined markets, but do have an effect (or have a positive effect) on exit in real markets. Our analyses suggest that there might be too optimistic entry of individuals in urban areas. Camerer and Lovallo (1999) found evidence of excess market entry – entry into crowded markets that offered slim success chances – ostensibly instigated by individuals who held biased (e.g. overconfident) assessments of their competitive abilities. This can be prevented, if potential entrepreneurs become better informed about their chances of entrepreneurial success (and thus will be more likely to "give up"). The reverse phenomenon – underoptimism – might also be prevalent: our analyses suggest that Corporatist welfare regimes (and in Southern Europe) seem to have this effect on their inhabitants.

Exit has been a central topic in this paper. One of the key axioms in economics is that the least viable (productive) businesses will be eliminated due to selection pressures in the market, i.e. market selection (Bellone et al. 2008). As stated before, entrepreneurial exit does not necessarily equate business exit, in two ways: first, so called habitual entrepreneurs can exit a business while continuing with another business, and second, entrepreneurs can exit their business while the business continues to exist (the "sell-off" category in our analyses). In this paper we have made the distinction between entrepreneurial exit due to business failure and due to sell-off. In that sense, we have addressed a shortcoming in much of the exit literature that has equated business failure with sell-offs within an overall category of business exit. However, we also know that many entrepreneurs stick to a marginal business – and thus an entrepreneurial career – because they have relatively low aspiration levels, while a subset of entrepreneurs close down profitable businesses because these businesses do not reach the high aspiration levels of these ambitious (often human capital rich) entrepreneurs (Gimeno et al. 1997). Even though we do not find a related positive effect of education on exit (we even find contrasting evidence: a negative effect of education), the heterogeneity in aspiration levels questions the universal appropriateness of the evolutionary mechanism of "survival of the fittest". Some authors have also emphasized the evolutionary mechanism of "selection via differential growth" (Nelson and Winter 1982). Such a mechanism is outside the scope of our empirical analyses. Even though we recognize the heterogeneity in businesses (ranging from marginal self-employed to the high-growth innovative industry leader; cf. Santarelli and Vivarelli 2007) which is not taken into account in our analyses, we do still value the prevalence of the "survival of the fittest" mechanism. In a recent overview of the empirical industrial economics literature on growth and exit, Coad (2009) concludes that selection mainly operates via elimination of the least productive businesses, and that the mechanism of selection via differential growth does not appear to be as strong.

Even though this paper's main contribution is to the evolutionary economics research field, it contains some evidence that confirms the neo-classical approach to entrepreneurship. Although entrepreneurship is largely neglected in this branch of economics (see Bianchi and Henrekson 2005), there are some key contributions which "explain" entrepreneurship by the risk preferences of

individuals (Kihlstrom and Laffont, 1979). The empirical evidence in this paper confirms the importance of risk tolerance in stepping up the "entrepreneurial ladder" (Van der Zwan et al. 2009), and, more specifically, as a driver of entrepreneurial persistence in imagined and real markets.

Our paper also contributes to the institutional literature on the effects of welfare state regimes (Esping-Andersen 1999) and varieties of capitalism (Hall and Soskice 2001) in a new way. This literature has largely neglected entrepreneurship, or only focussed on entry (Casper 2007). We have shown in this paper that these institutions are also an important element in the explanation of entrepreneurial exit in real and imagined markets. The Anglo-Saxon regime that is generally seen as the most fertile institutional system for entrepreneurship (Bosma et al. 2008), seems to have a negative effect on exit in imagined markets in comparison with the Corporatist and Southern Europe regimes having positive effects. In addition, the institutionally less advanced Southern Europe and post-communist regimes have a clear negative effect on the probability of exit via sell-off compared to the Corporatist regime which is generally seen as hostile to entrepreneurship. Our findings redirect attention to the role of non-market selection environments next to market selection environments (Nelson and Winter 1982). Future research should include a better categorization of the institutional environment next to the welfare state typologies (Freytag and Thurik 2007).

An important indirect measure of market selection is captured by our ecological variables "metropolitan" and "urban" environments. In these high density environments competition between businesses is known to be much fiercer than in low density, rural environments (Audretsch 1998; Caniëls 2000; Fritsch and Mueller 2008; Van Stel and Suddle 2008). We find that individuals do not seem to let their aspirations be affected by this competition, and once they have entered the real market, their businesses are more likely to fail in urban environments than in rural environments. This may be interpreted as evidence for the prevalence of overoptimistic entrepreneurs in high density areas, in which the barriers to entry are (perceived to be) relatively low (Hoover and Vernon 1959), and thus might lure relatively many low quality entrepreneurs to the market, who subsequently face the strong selection pressure in these highly competitive environments. However, there might be another mechanism at play here, which relates to the specific nature of the labour market in urban and especially metropolitan areas. These areas contain relatively large labour markets with many opportunities, which act as a buffer for individuals that "give it a try" as entrepreneur and subsequently fail. This makes it easier for entrepreneurs to regard their business as a failure and to continue with a (more attractive) wage earner career. More research is needed into the specific nature and effects of urban and metropolitan environments on different aspects of the entrepreneurial process (Bosma 2009).

This paper is one of first steps into a research field of entrepreneurial decision-making in imagined and real markets. Further studies may build on our explorations and provide more specific variables and longitudinal research methods, and experimental research methods, in order to trace the causes of decision-making that precedes entrance into the market by entrepreneurs.

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Table 1
Percentages per entrepreneurial engagement level per country

	Never considered	Thinking	Taking steps	Gave up	Young Business (<3 years)	Mature Business (>3 years)	Failure	Sell-off	Observations
Austria	57	7	2	21	2	5	1	5	475
Belgium	63	6	3	9	2	7	2	7	897
Cyprus	40	15	3	12	5	11	4	11	493
Czech Republic	49	13	4	18	3	8	3	3	910
Denmark	47	20	3	12	2	5	3	8	495
Estonia	59	9	6	9	4	8	3	3	451
Finland	56	6	2	10	3	9	2	12	419
France	57	10	3	17	2	4	1	7	983
Germany	48	12	4	20	4	6	2	5	966
Greece	36	15	2	14	8	11	4	10	989
Hungary	53	14	3	6	2	10	4	7	983
Iceland	41	14	5	9	4	14	2	12	442
Ireland	49	13	4	12	4	7	4	6	477
Italy	56	7	4	15	3	5	2	8	941
Latvia	50	25	6	1	3	6	3	6	451
Lithuania	61	14	6	4	2	5	3	4	471
Luxembourg	55	8	3	20	3	4	2	6	462
Malta	63	8	1	24	1	2	0	1	434
Netherlands	52	8	4	18	4	5	2	8	937
Norway	58	11	2	8	3	9	1	8	461
Poland	45	14	6	15	2	8	4	6	963
Portugal	58	4	3	15	5	5	3	7	969
Slovakia	43	27	5	12	2	5	3	4	479
Slovenia	55	13	1	18	2	3	2	5	492
Spain	57	8	3	14	3	6	3	6	964
Sweden	45	15	6	12	3	5	2	11	478
United Kingdom	47	8	5	20	3	5	2	9	971
Europe	52	11	4	14	3	7	3	7	18,453
United States	30	21	9	9	4	8	4	14	947
Europe+US	51	12	4	14	3	7	3	7	19,400

Source: 2007 "Flash Eurobarometer Survey on Entrepreneurship, No. 192" (conducted in 2007)

Table 2
Composition of dependent variables

Engagement levels:	Never considered	Thinking	Taking steps	Gave up	Young Business (<3 years)	Mature Business (>3 years)	Business Failure	Sell-off
Our reduced categories:		Entrepreneurial intentions/efforts		Exit in imagined market	Business owner		Exit in real market	
Value of dependent variables:		0		1	0		1a	1b

Table 3
Categorizations of national institutional systems

Category	**Countries**	**Relative contribution**
Corporatist/Social Insurance	Austria, Belgium, France, Germany, Italy, Luxembourg, Netherlands	0.28
Southern Europe	Cyprus, Greece, Malta, Portugal, Spain	0.21
Post-communist	Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia	0.26
Social democratic/ Universalist/Scandinavian	Denmark, Finland, Norway, Iceland, Sweden	0.11
Liberal/Anglo-Saxon*	Ireland, United Kingdom, United States	0.14

* used as reference category in regressions

Table 4
Estimated coefficients of sample selection probit model explaining imagined and real exit

Type of exit	**Imagined exit**		**Real exit due to failure**	**Real exit due to sell-off**
Reference group in selection equation (the "non-selected")	"Never considered"	"Young business" and "Mature" business"	"Never considered", "Thinking" and "Taking steps"	"Never considered", "Thinking" and "Taking steps"
Intercept	-0.667	-1.982***	3.022	0.685
Personal determinants				
Risk tolerance	-0.169***	-0.067	-0.273***	-0.120
Education	-0.022***	-0.014***	-0.013***	-0.009*
Self-employed parents	-0.195***	-0.074	-0.328***	-0.089
Male	-0.136	0.109**	-0.460**	-0.269
Age	0.040**	0.084***	-0.097	-0.048
(Age/100) squared	-0.563	-5.529***	10.572*	7.697*
Ecological determinants				
Perceived lack of financial support	-0.045	-0.067	0.205	0.139**
Perceived administrative complexities	0.082*	-0.007	0.171*	0.118
Perceived insufficient information	-0.010	-0.005	0.023	0.004
Metropolitan	-0.071	-0.101**	0.188	0.104
Urban	-0.033	-0.079*	0.159**	0.071
Corporatist	0.512***	0.447***	-0.117	-0.144
Southern Europe	0.502***	0.534***	-0.264***	-0.350***
Post-communist	-0.134**	-0.072	-0.133	-0.403***
Social democratic	0.080	0.082	-0.206	-0.073
Further statistics				
Observations exit equation	4,665	4,665	2,090	2,831
Observations reference group in selection equation	6,633	1,674	9,141	9,141
Wald χ^2 (15 degrees of freedom)	1,001.36***	990.35***	331.16***	400.34***
Maximum log likelihood value	-9,829.90	-6,044.51	-5,781.46	-7,583.94
Correlation between exit and selection equation	-0.61	-0.74**	-0.81	-0.18

*** denotes significance at the 0.01-level; ** at 0.05; * at 0.10.

Table 5
Estimated coefficients of selection equations

Type of exit	**Imagined exit**		**Real exit due to failure**	**Real exit due to sell-off**
Reference group in selection equation (the "non-selected")	"Never considered"	"Young business" and "Mature" business"	"Never considered", "Thinking" and "Taking steps"	"Never considered", "Thinking" and "Taking steps"
Intercept	-0.512***	3.792***	-4.230***	-3.555***
Personal determinants				
Risk tolerance	0.150***	-0.117***	0.171***	0.190***
Education	0.016***	-0.003	0.010***	0.008***
Self-employed parents	0.079***	-0.260***	0.230***	0.269***
Male	0.283***	-0.392***	0.535***	0.510***
Age	0.019***	-0.121***	0.131***	0.101***
(Age/100) squared	-4.085***	11.446***	-13.462***	-9.187***
Ecological determinants				
Perceived lack of financial support	0.104***	0.167***	-0.057	-0.066**
Perceived administrative complexities	-0.057*	0.201***	-0.201***	-0.171***
Perceived insufficient information	-0.021	-0.045	0.018	0.007
Metropolitan	-0.031	0.039	-0.026	-0.045
Urban	-0.034	0.085**	-0.086**	-0.107***
Corporatist	-0.220***	-0.036	-0.071	-0.115***
Southern Europe	-0.216***	-0.357***	0.246***	0.098**
Post-communist	-0.004	-0.188***	0.169***	-0.048
Social democratic	-0.213***	-0.248***	0.064	0.072
Observations reference group in selection equation	6,633	1,674	9,141	9,141

*** denotes significance at the 0.01-level; ** at 0.05; * at 0.10.

Table 6
Empirical evidence concerning exit in imagined and real markets

Variable	**"Gave up"**	**"Failure"**	**"Sell-off"**
Risk tolerance	-/0	-	0
Education	-	-	-
Self-employed parents	-/0	-	0
Male	0/+	-	0
Age	+	+	+
Perceived environmental constraints	partly +	partly +	partly +
Metropolitan/urban	0/-	+	0
Strong welfare state	+	0	0

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[1] We would like to thank one of the anonymous reviewers for suggesting this opposite effect of risk tolerance on exit in imagined markets.

[2] In more general terms, neuropsychological research found that age is negatively related to risk tolerance (Deakin et al. 2004).

[3] There might also be more job opportunities in urban areas, which has a positive effect on exit in real markets (i.e. exchanging an entrepreneurial career for a better paid wage earner career).

[4] Weak welfare states like the US and the UK have less stringent regulations concerning the start-up of firms, which leads to relatively low entry and exit costs (Nicoletti et al. 1999).

[5] Romania and Bulgaria (EU member states since 2007) are not included in the data set.

[6] For more background information on this data set (including the English questionnaire), we refer to the following website of the European Commission: http://europa.eu.int/comm/enterprise/enterprise_policy/survey/eurobarometer_intro.htm.

[7] Note that in Grilo and Thurik (2008) no distinction is made between real exit due to business failure and real exit due to sell-off.

[8] This may be because of high values of unmeasured variables that are intrinsically included in the disturbance terms.

[9] The two binary probit equations can be simultaneously estimated via maximum likelihood, which results in consistent and asymptotically efficient and normally distributed estimators. Omitting variables from the exit equation, while including them in the selection equation, may lead to incorrect conclusions of the existence of selection bias. We proceed with similar variable sets in both equations (exit and selection equation) according to the following two reasons. First, we decide not to exclude any variables from the exit equations because of the expected relations we want to test. Second, it appears hard to find a variable that is related to the selection process, but not with either type of exit, given the present data set. The model is formally identified without exclusion restrictions in the exit equation (although only on functional form, i.e. distributional assumptions about the disturbance terms). In the linear case, standard errors must be corrected for heteroskedasticity (using White's heteroskedasticity consistent covariance matrix). Because we work in a binary context, standard errors of the disturbance terms are normalized to one. The disturbance terms are assumed to have a bivariate normal distribution.

[10] A small fraction of 319 individuals of the original sample responded that they never have attended full time education. These observations have value 0 for the education level.

[11] Ideally, we would have had values of the explanatory variables at the time of exit. For example, we acknowledge that age at the time of imagined or real exit is preferred as the explanatory variable here, but we do not know how many years ago the exit took place.

[12] Clearly, this is a crude indicator of risk attitudes and calling this dummy "risk tolerance" may be abusive. Nevertheless, in the absence of a better measure we believe it provides some information on how taking risks is perceived by the respondent.

[13] This category is similar to the "Liberal Market Economy" in the "varieties of capitalism" literature (Hall and Soskice 2001; Casper and Whitley 2004).

[14] The exit in imagined markets regression contains respondents that indicate to be self-employed at the same time. It could be that these respondents are "imagined portfolio entrepreneurs" in that they have taken steps or have thought about setting up a business next to their present business. Excluding these imagined portfolio entrepreneurs (302 observations) does not result in different conclusions when the reference group in the selection equation is "never considered". When the reference group is "young business" and "mature business" we observe a significant coefficient of risk tolerance (at 10%) and non-significant coefficient of metropolitan and urban areas.

[15] A likelihood ratio test leads to this conclusion.

[16] Note that risk tolerance does not have a significant influence on exit in imagined markets when the reference group of the selection equation is "young business" and "mature business". In addition, when a regression is performed with all three engagement levels as the reference group ("never considered", "young business" and "mature business"), risk tolerance is not significant either.

[17] When the engagement levels "never considered", "young business", and "mature business" are taken together in the selection equation, self-employed parents is significant at 1%.

[18] This relationship only holds true when the reference group of the selection equation consists of "young business" and "mature business". When the three groups are again taken together, metropolitan areas have a significant negative influence.